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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/554,274

09/13/2006

Hans-Jurgen Albrecht

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LOCTITE CORPORATION
1001 TROUT BROOK CROSSING
ROCKY HILL, CT 06067

EXAMINER

COHEN, STEFANIE J

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

12/04/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/554,274	ALBRECHT ET AL.	
	Examiner	Art Unit	
	STEFANIE COHEN	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 15 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Regarding claims 2, 4-6, 10-14 and 16-18, the limitations are considered product by process limitations only and not to further limit the structure of the final product of the solder material because the composition of the end product does not depend on the method of production.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4-6, 10, 11 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding the dependent claims which recite M1 and M2, it is not clear if applicant intends to claim the intermediate or final product of the solder alloy material. The claims recite "solder material" and give the final alloy composition, but dependent claims then refer to the material prior to the final state. For the purpose of examination, the claims are interpreted to be referring to the final product.

Clarification is needed if applicant is claiming one specific alloy composition or 2 separate alloy compositions.

Art Unit: 1793

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being unpatentable by Tulman (4806309). Tulman, experiment 1, teaches a solder composition consisting of 95% tin, 3% antimony, 1.5% bismuth and .5% silver.

Claim 2 is rejected under 35 U. S. C 102 (b) as being unpatentable over Domi et al (6319461). Domi, example 14, teaches an alloy comprising 93.289% tin by weight, .7% copper by weight, .3% antimony by weight and 3% bismuth by weight.

Claims 1, 2, 7 and 14 are rejected under 35 U.S.C. 102(b) as being unpatentable by Achari et al (5863493). Achari teaches a solder composition comprising 91.5%-96.5% tin, 2-5% silver, .1-3% nickel, 0-2.9% copper. Achari, table 1 No. 1, teaches a Si:Sb ratio of .666-5.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6, 8-12, 16 and 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Achari et al (5863493). Achari, col. 3 lines 50-52, teaches a tin alloy consisting of 91.5%-96.5% tin, 2-5% silver, .1-3% nickel, 0-2.9% copper. Achari further teaches the inclusion of small quantities (less than 1% by weight) of other elements such as Bi or Sb. It would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the amount of bismuth and antimony present in the composition to further improve the mechanical and physical properties of the alloy.

Regarding claim 4, Achari teaches an alloy which can consist of 91.5%-96.5% tin, 2-5% silver, .1-3% nickel, 0-2.9% copper and less than 1% Bi. Achari further teaches an alloy which can consist of 91.5%-96.5% tin, 2-5% silver, .1-3% nickel, 0-2.9% copper and less than 1% Sb.

Art Unit: 1793

Regarding claims 6 and 11, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the weight ratio of M1: M2 to obtain specific properties for the overall intended use of the alloy.

Regarding claim 8, Achari teaches a tin alloy comprising .1-3% nickel.

Regarding claim 9, it would have been obvious to one of ordinary skill in the art at the time of the invention to increase the amount of bismuth in an alloy to decrease the melting point of the alloy.

Regarding claim 10, Achari teaches an alloy which can consist of 91.5%-96.5% tin, 2-5% silver, .1-3% nickel, 0-2.9% copper and less than 1% Bi. Achari further teaches an alloy which can consist of 91.5%-96.5% tin, 2-5% silver, .1-3% nickel, 0-2.9% copper and less than 1% Sb. It would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the amount of bismuth or Sb in the alloy to obtain a specific melting point.

Regarding claims 14-16 and 18, Achari, table 1 No. 1, teaches a Si:Sb ratio of .666-5.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Achari et al (5863493) as applied to claim 2 and further in view of Steen (WO 00/48784).

Art Unit: 1793

Although Achari teaches a tin alloy, Achari does not teach a composition that does not contain nickel.

Steen teaches a lead- free solder alloy comprising up to 1-10% bismuth, 0-5% copper, 0-10% Ag and 0-5% Sb.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the alloy as taught by Steen with the alloy as taught by Achari to obtain specific properties for the overall intended use of the alloy.

Regarding claims 13 and 17, Achari, table 1 No. 1, teaches a Si:Sb ratio of .666-5.

Response to Arguments

Applicant's arguments filed 10/15/2008, with respect to the rejection(s) of claim(s) 1-18 under Domi have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Domi regarding claim 2, Tulman regarding claims 1 and 2, Achari regarding claims 1-4, 6--12, 14-16 and 18 and Achari in view of Steen regarding claims 5, 13 and 17.

Applicant amended Claim 1 to state the alloy consists essentially of Sn, Ag, Bi, Sb, Cu and Ni. Although Domi teaches an alloy comprising these specific elements,

Art Unit: 1793

Domi further teaches other elements comprising the alloy. Therefore this rejection has been withdrawn.

Achari teaches an alloy consisting essentially of Sn, Ag, Cu and Ni and further includes Bi, Sb or both.

Applicant only amended claim 1 to “consisting essentially of”. Claim 2 is still a “comprising claim” therefore the rejection still holds.

Regarding claim 5, Steen teaches an alloy consisting essentially of Ag, Cu, Sb, with a remainder of tin.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 1793

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEFANIE COHEN whose telephone number is (571)270-5836. The examiner can normally be reached on Monday through Thursday 9:3am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Melvin Curtis Mayes can be reached on 5712721234. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 10/554,274

Page 9

Art Unit: 1793

SC

November 24, 2008

/Melvin Curtis Mayes/

Supervisory Patent Examiner, Art Unit 1793